

## LEARNER-RELATED FACTORS AFFECTING MATHEMATICS LEARNING

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### ABSTRACT

*The presence of a coronavirus pandemic has resulted in new changes in the way students learn, particularly in mathematics. Thus, the purpose of this study was to identify learner-related factors that could influence the Mathematics learning of BSEd-Math students at Cebu Technological University-Argao Campus during the academic year 2020-2021.*

*This study employed a descriptive quantitative method which involved 84 respondents. The instrument used was an adapted survey questionnaire of Davis (2017), Saritas and Akdemir (2009), Belhu (2017), Oyediran, et al. (2018), Calisang, et al. (2020), Peteros, et al. (2019), and Hennessy and Dunham (2002).*

*The findings revealed that the majority of the respondents were females between the ages of 20 and 21. Most of the respondents lived in urban areas and had low socioeconomic status. In terms of Mathematics, they scored in the 1.6 to 2.0 range. Furthermore, for individual-related factors, students agreed that it affects their Mathematics learning, whereas they disagreed for home and technology-related factors, claiming that it only slightly affects their learning. Moreover, it revealed that there was no significant relationship between learner-related factors and students' Mathematics performance.*

**KEYWORDS:** *Learner-Related Factors, Mathematics Performance, Descriptive Quantitative, BSEd-Math Students & Cebu Technological University-Argao Campus*

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### 1. INTRODUCTION

Mathematics is essential to any country's educational and developmental goals all over the world. It provides an efficient method of acquiring mathematical knowledge and integrating new aspects of learning, especially for students. In this regard, a student's academic performance should be considered because it is linked not only to his or her intellectual capacity, but also to his or her learning environment, which varies from one student to the next depending on the factors that he or she may experience. Many educational institutions have long encouraged students to learn in a pleasant environment while receiving ongoing assistance from a more knowledgeable individual.

It is a teacher's responsibility to facilitate the students throughout the process of solving problems and equations thrown in their way; however, due to the presence of coronavirus pandemic has caused a significant change in the way every student is educated. One way to continue the learning process in the midst of the pandemic is through online learning sessions, which can be done through synchronous and asynchronous classes; thus, different online platforms are used in the teaching-learning process to address the concern that is lurking in the educational system. As a result, online learning was established, which was then adopted by many educational

institutions in the delivery of instructions. This is an alternative method of transferring knowledge to students. Furthermore, this can be used to refer to a wide range of programs or applications that use the internet as a means of interaction and different functions such as providing various learning or instructional materials and using this platform to assist students. In line with this, there are numerous online resources, such as relevant websites that provide rich materials for learners, available over the Internet (Thurmond et al., 2002).

Distance education is increasingly using the Internet and information technologies to better meet students' needs, interests, learning styles, and work schedules (Lim et al., 2008). However, this may be entirely true in some cases but not in others, given that students have their own learning experiences based on the external and internal factors that they have encountered. As a result, in electronic-based learning, learners must align their mindset to this specific design. Furthermore, measures should be taken to understand the students' own learning styles so that facilitators can adjust the way these students acquire knowledge. As a result, because online learning also supports independent learning, this can be effective in facilitating students who have their own learning styles.

This study sought to determine what possible factors, such as individual-related, home-related, and technology-related factors, might be considered as reasons for the influences that occur in this new normal set-up while teaching Mathematics to Cebu Technological University-Argao Campus BSEd-Math students.

## 2. METHODOLOGY

This study employed a descriptive quantitative method which involved 84 students from Cebu Technology University-Argao Campus (Figure 1), who were taking up Bachelor of Secondary Education Major in Mathematics. The respondents were chosen through proportional stratified random sampling. The main instruments used for gathering data were a survey questionnaire adapted from Davis (2017), Saritas and Akdemir (2009), Belhu (2017), Oyediran, et al. (2018), Calisang, et al. (2020), Peteros et al. (2019), and Hennessy and Dunham (2002) to determine the learner-related factors that could affect the Mathematics learning of the BSEd-Math students of the Cebu Technology University-Argao Campus. The gathered data were tallied using the frequency count and simple percentage, whereas the others were computed through weighted mean and Pearson-r.



Figure 1: Location Map of the Research Environment.

### 3. RESULTS AND DISCUSSION

#### 3.1 Demographic Profile of the Respondents

##### 3.1.1 Respondents' Age

Table 1 shows the presentation of the respondents' age. Among the 84 respondents, 54 of them or 64.29% of the total respondents aged between 20 to 21 years old wherein it has gathered the greatest number of responses, whereas the ages 18 to 19 got 23 responses or 27.38% of the total respondents. On the other hand, there are only two (2) students aged 24 years old and above, and depicts 2.38% of the total percentage, while five (5) or 5.95% of them belonged to 22 to 23 years old. Thus, the average age was 21 years old.

In association with Pereros et al's (2019) study, the said range is the right age for the first to third year BSEd-Math students. This implies that most of them are at the right age of schooling. Furthermore, in Spano's (2004) study in which he has stated in his article "Stages of Adolescent Development", ages below 21 are categorized as late adolescence in which the individuals within the said ages have the ability to express and think ideas, to make independent decisions, to be self-reliant, and to compromise. Significantly, this means that students with the aforementioned ages are perceived to be the right ages as respondents of this study.

Age	f		%
24 and above	2		2.38
22-23	5		5.95
20-21	54		64.29
18-19	23		27.38
<b>Total</b>	<b>84</b>		<b>100.00</b>
<b>Average Age</b>		<b>21 years old</b>	

##### 3.1.2 Respondents' Gender

Of the 84 respondents, 57 of them or 67.86% of the total respondents were females, whereas there are 27 or 32.14% of the total respondents were males. This implies that there are a greater number of females as compared to males. According to Mutjaba and Reiss (n.d.) as cited in Smith's (2014) study, females are more likely to aspire to study the subject Mathematics if their school peers that surround them have high aspirations. Likewise, the result is the same with the findings on the study conducted at the Federal College of Education, Abeokuta by Oyediran et al. (2018) wherein females were predominant as compared to males. This implication has also been supported based on the number of enrollees specifically in the College of Education Major in Mathematics in the Cebu Technological University-Argao Campus.

**Table 2: Respondents' Gender**

Gender	f	%
Male	27	32.14
Female	57	67.86
<b>Total</b>	<b>84</b>	<b>100.00</b>

##### 3.1.3 Respondents' Geographical Location

As reflected in the table, of the total 84 respondents of the study, there are 59 students who reside below 10 kilometers away from the national highway which means that they've accumulated 70.24% of the total percentage. On the other hand, 25 of the respondents belong to the rural areas in which 29.76% of the students live at areas that are 10 kilometers or more

away from the national highway. Based on the results found, this means that BSEd-Math students who are enrolled in Cebu Technological University-Argao Campus mostly reside in urban areas. This implies that students who live in this area have a tendency of accessing resources that can provide them with better facilities and infrastructures for their learning.

Similarly, in the study of Alepoju and Oluchukwa (2011), they have gathered relevant data wherein it has revealed the marked difference between the two localities. The result shows that students who live in urban areas have a remarkable mean score obtained as compared to rural. However, in the study of Alipio (2020), it showed that there is an equal proportion of the two areas. This denotes that students who lived in different areas and in different schools and places do not affect the students' capability in learning.

**Table 3: Respondents' Geographical Location**

<b>Geographical Location</b>	<b>f</b>	<b>%</b>
Urban	59	70.24
Rural	25	29.76
<b>Total</b>	<b>84</b>	<b>100.00</b>

### 3.1.4 Respondents' Socio-Economic status

As presented in the table, of the 84 total respondents of the study. It reveals that 61 of them has a monthly family income of below Php 10,957. It denotes that 72.62% of the total respondents belong to a Poor Income Class in society and it got the highest frequency. On the other hand, the Upper Middle-Income Class got the lowest frequency of only 1 or 1.19% of the total respondents. This entails that most of the respondents' families are still financially unstable.

In parallel to this study, according to Escarce (2003), family income has a profound influence in giving educational opportunities to the students as well as their chances of educational success. Hence, based on the aforementioned result, this implies that parents' substantive income in catering to their children's education should be realized as this can possibly affect students' learning.

**Table 4: Respondents' Socio-Economic Status**

<b>Socio-economic status</b>	<b>f</b>	<b>%</b>
Upper Middle-Income Class (76,669 – 131,484)	1	1.19
Middle Income Class (43,828 – 76,669)	2	2.38
Lower Income Class (21,914 – 43,828)	5	5.95
Low Income Class (10,957 – 21,914)	15	17.86
Poor (below 10,957)	61	72.62
<b>Total</b>	<b>84</b>	<b>100.00</b>

### 3.1.5 Respondents' Mathematics Performance

As reflected in Table 5, out of 84 respondents, the average grades ranging from 1.6 to 2.0 have the highest frequency with 48 responses or 57.14%. This means that majority of the students who responded to the study have a grade between the aforementioned interval. Based on its categorical response, the said range is considered to be "Very Good". With this, it implies that students' grades in their first semester, the academic year 2020-2021 have very good grades. On the other hand, there were 32 students who were considered to be "Superior" compared to the others as their average grades in Mathematics fall on the interval of 1.0 to 1.5 and has a percentage of 38.10.

The distribution of the Mathematics grades of the BSEd-Math students implies that they have a good performance

in the Mathematics course. According to Schreiber (2000) as cited in Balbalosa's (2010) study entitled "Factors Affecting Mathematics Performance of Laboratory High School students at Laguna State Polytechnic University", those who have a positive attitude toward the said course have a better performance in this subject. Several students particularly those who are younger and less established students, have realized that their attitude toward a particular subject is proportional to their recent success in the class (Schenkel, 2009).

**Table 5: Respondents' Mathematics Performance**

<b>Mathematics Performance</b>	<b>f</b>	<b>%</b>
Superior (1.0 – 1.5)	32	38.10
Very Good (1.6 – 2.0)	48	57.14
Good (2.1 – 2.5)	4	4.76
<b>Total</b>	<b>84</b>	<b>100.00</b>

### 3.2 Perceived Learner-Related Factors Affecting Mathematics Learning

#### 3.2.1 Perceived Individual-Related Factors

##### 3.2.1.1 Personal Condition

Table 6 shows the statements of the Individual-Related Factors which refers to the Personal Condition of the students that could possibly affect the respondents' Mathematics learning. The statement that has the highest weighted mean is "I am able to communicate with the instructor throughout the semester." It garnered a mean of 2.89 with a verbal description of "Agree" which means that the factor affects the Mathematics learning as communication is a key to understanding and if they were not able to have good communication with their instructor, they will have a hard time coping with their lesson.

Based on the result, it denotes that a teacher's involvement in the students' learning is one of the most important factors that really affect students' performance, especially in Mathematics. Teachers are the people who provide education for students individually and holistically, and motivate them in teaching learning activities. According to Mtitu (2014), learner-centered methods and pedagogies that may require teachers to let students actively involved in the teaching-learning process must be implemented for the teachers to practice an efficient and effective way of teaching.

On the other hand, the statement that has the lowest weighted mean is "I have difficulty in hearing." It got a mean of 1.76 with a verbal description of "Disagree" which means that the factor slightly affects Mathematics learning as they were able to hear properly during the discussion. It also reveals the results of the grand mean of 2.40 with a verbal description of "Disagree" which means that the factors slightly affect Mathematics learning. This implies that the students' Personal Condition is not entirely needed to be considered for them to effectively learn Mathematics, but this will still hold importance in the learning process. Meanwhile, it was observed that learning is best when the body, spirit and soul are in accord; otherwise, learning will be ineffective (Frenzel et al., 2007). Hence, the learner should be able to understand the importance of Mathematics and should be exposed to all the experiences that lead to success in Mathematics Education.

**Table 6: Perceived Individual-Related Factors as to Personal Condition**

Statements	WM	Verbal Description	Interpretation
1. My personal needs as a student are met in the online environment	2.60	Agree	The factor affects Mathematics learning.
2. I have plenty of time to think and draft responses for online discussions.	2.81	Agree	The factor affects Mathematics learning.
3. I am able to communicate with the instructor throughout the semester.	2.89	Agree	The factor affects Mathematics learning.
4. I have difficulty in seeing.	1.95	Disagree	The factor slightly affects Mathematics learning.
5. I have difficulty in hearing.	1.76	Disagree	The factor slightly affects Mathematics learning.
<b>GRAND MEAN</b>	<b>2.40</b>	<b>Disagree</b>	<b>The factor slightly affects Mathematics learning.</b>

### 3.2.1.2 Attitude

As shown in the table, the statements of the Individual Factors about the students' Attitude that can alter their learning in Mathematics. The statement with the highest weighted mean is "It worries me for there are unfamiliar online learning technical tools to me". It got a mean of 2.83 with a verbal description of "Agree" which means that the factor affects Mathematics learning as the sudden change of the way of learning brought difficulty to the students for they will have to learn new technical tools to continue learning amidst the changes.

On the other hand, the statement that has the lowest weighted mean is "It fears me in using the different learning methods used for online learning for Mathematics." It got a mean of 2.54 with a verbal description of "Agree" which means that the factor affects Mathematics learning as the sudden shift to Online Learning requires different learning methods and it fears the students. Table 7 also reveals the grand mean of 2.65 with a verbal description of "Agree" which means that the factors affect Mathematics learning. It implies that the attitude of the students brings about their learning in Mathematics.

According to Akey (2006) as cited in Enu, et al.'s (2015) study, students' beliefs about their expectations for success and competence in school have been directly linked with their levels of engagement, as well as their emotional states in which it promotes or interferes with their ability to be academically successful. With this, attitudes determine the effort a student is likely to give his learnings to the subject (Mathematics). Further, Moeinikia and ZahedBabelan (2010) have pointed out that the attitudes of students towards Mathematics possibly affect how they engage and perform on the given subject or course.

Moreover, attitudes have the possibility to influence the students' willingness to learn in the field of Mathematics. Significantly, there is a need to establish a student's attitude in engaging learning activities specifically in Mathematics courses. Thus, it is necessary for Mathematics teachers to give positive attitudes towards Mathematics and strive for good performance, especially in the upper classes.

**Table 7: Perceived Individual-Related Factors as to Attitude**

Statements	WM	Verbal Description	Interpretation
1. I am feeling sleepy when in class.	2.57	Agree	The factor affects Mathematics learning.
2. I cannot focus when I am hungry in class.	2.67	Agree	The factor affects Mathematics learning.
3. It makes me shy or lack of confidence in online learning.	2.64	Agree	The factor affects Mathematics learning.
4. It worries me for there are unfamiliar online learning technical tools to me.	2.83	Agree	The factor affects Mathematics learning.
5. It fears me in using the different learning methods used for online learning for Mathematics.	2.54	Agree	The factor affects Mathematics learning.
<b>GRAND MEAN</b>	<b>2.65</b>	<b>Agree</b>	<b>The factor affects Mathematics learning.</b>

### 3.2.1.3 Study Habits

The result of the table revealed that the statement that has the highest weighted mean is "I study harder to improve my performance when I get low grades." It obtained a mean of 3.25 with a verbal description of "Agree" which means that the factor affects Mathematics learning for the low grades of the students motivate them to study harder and expect an improvement of their grades afterwards. Based on the result, this implies that achievement motive or motivating oneself can be a driving force for students to do well in class as students' desire to get a higher grade has been evident during classes specifically every time a student gets low scores.

In opposition, the statement that has the lowest weighted mean is "I am lazy to study". It accumulated a mean of 2.43 with a verbal description of "Disagree" which means the factor slightly affects Mathematics learning. This indicates that the majority of the students are not lazy to study which shows that they have good study habits. Meanwhile, the table also reveals the grand mean of 2.84 with a verbal description of "Agree" which means that the factor affects Mathematics learning. This implies that the good study habits of the students can help them in learning Mathematics.

In relation to this, Odiri (2015) suggested that study habits play a significant role in determining the achievement of students and quality of education, especially in Mathematics since students cannot grasp all the learning they need on the subject from their teachers inside the class. They have to practice and manage 48 themselves study plans and routines to foster their learning and be knowledgeable in various areas, especially in their area of specialization. Ebele and Olofu (2017) indicated that how a student takes his studies determine his performance. This denotes that how a student learns his or her academic materials affect his or her performance in class. Additionally, Ebele and Olofu (2017) have indicated various good study habits that can improve students' academic performance which includes regular attendance in class, reading the learning materials prior to the lessons that have been covered in the class, asking questions from the class to clarify unclear concepts, and others. With this, it has shown how study habits made an impact on a student's academic performance as it plays a relevant role.

**Table 8: Perceived Individual-Related Factors as to Study Habits**

Statements	WM	Verbal Description	Interpretation
1. I study only when there is test.	2.64	Agree	The factor affects Mathematics learning.
2. I am lazy to study.	2.43	Disagree	The factor slightly affects Mathematics learning.
3. I am disturbed when studying.	2.82	Agree	The factor affects Mathematics learning.
4. I study harder to improve my performance when I get low grades.	3.25	Agree	The factor affects Mathematics learning.
5. I prefer finishing my studies and my assignments first before playing or watching television shows.	3.04	Agree	The factor affects Mathematics learning.
<b>GRAND MEAN</b>	<b>2.84</b>	<b>Agree</b>	<b>The factor affects Mathematics learning.</b>

### 3.2.1.4 Interest

As observed, the statement that has the highest weighted mean is "I want to develop my skills and abilities in a culturally responsive classroom environment." It got a mean of 3.44 with a verbal description of "Strongly Agree" which means that the factor greatly affects Mathematics learning. Majority of the students have a greater interest in learning Mathematics and developing their skills and abilities in a cultural classroom environment.

However, the statement with the lowest weighted mean is "I participate actively in school's extracurricular activities." It got a mean of 2.65 with a verbal description of "Agree" which means that the factor affects Mathematics learning. This indicates that the students' active participation in extracurricular activities affects their learning. Meanwhile, the table also reveals the grand mean of 2.97 with a verbal description of "Agree" which means that the factor affects Mathematics learning. This implies that the interest of the students matters in learning Mathematics.

On the other hand, according to Ryan and Patrick (2001), students who have lesser interest in doing their tasks would negatively affect their academic performance. Likewise, according by Silvia (2006) in which he has stated in his study that the strength of one's interest in schooling as well as in learning may represent an important aspect of motivation, cognition, personality, behavior, development, emotion, reasoning and hobbies. Furthermore, to have a more engaged, and motivated learning experience for students, activating their interest is a must because if they have a higher interest in the given tasks, then it can lead to a persistent and positive result to their academic performance. With this, it showed how students' interest affect their studies especially in learning Mathematics.

**Table 9: Perceived Individual-Related Factors as to Interest**

Statements	WM	Verbal Description	Interpretation
1. I listen attentively to the discussion of my teacher.	3.13	Agree	The factor affects Mathematics learning.
2. I am prepared during test, quizzes, and examinations.	2.76	Agree	The factor affects Mathematics learning.
3. I want to develop my skills and abilities in a culturally responsive classroom environment.	3.44	Strongly Agree	The factor greatly affects Mathematics learning.
4. I participate actively in the discussion, answer exercises and or clarify things I do not understand.	2.86	Agree	The factor affects Mathematics learning.



5. I participate actively in school's extracurricular activities.	2.65	Agree	The factor affects Mathematics learning.
<b>GRAND MEAN</b>	<b>2.97</b>	<b>Agree</b>	<b>The factor affects Mathematics learning.</b>

### 3.2.2 Perceived Home-Related Factors

As shown in Table 10, it reveals the statements of home-related factors that could possibly affect the respondents' Mathematics learning. The statement that has the highest weighted mean is "I have several household chores." It has obtained a mean of 3.24 with a verbal description of "Agree" which means that the said factor affects the students' mathematics learning as they are busy doing their household chores.

On the other hand, the statement that has the lowest weighted mean is "I do not live with my parents." It means that majority of students have answered that they live with their parents; thus, obtaining a mean of 1.79 with a verbal description of "Disagree" which means that the said factor slightly affects the students' mathematics learning. Meanwhile, the obtained grand mean is 2.47 wherein it has a verbal description of "Disagree" with its corresponding interpretation which is it slightly affects the students' Mathematics learning. This implies that, as a whole, students have disagreed of the said statements indicated as its home-related factors; however, these statements can still be interpreted as "slightly affects" to the students' mathematics learning.

Further, the result of this study is associated with Diaz's (2003) study as cited by Oyediran, et al (2018) as it has been reported that in most studies, parents (family causal factors) and students (personal causal factors) can possibly influence on students' academic performance as it varies from one academic environment to another and to a student's cultural setting to the other. Hence, based on the aforementioned results, it denotes that even though parents expressed their value of their children's learning, their involvement has its varying degrees in terms of their children or the student's learning at home. Although some statements have been indicated as "agreed" and affects the students' learning, the majority has still immersed as the grand mean and it has a low probability of affecting the students in terms of their Mathematics learning.

**Table 10: Perceived Home-Related Factors**

Statements	WM	Verbal Description	Interpretation
1. My parents are both working.	2.30	Disagree	The factor slightly affects Mathematics learning.
2. I have several household chores.	3.24	Agree	The factor affects Mathematics learning.
3. I do not live with my parents.	1.79	Disagree	The factor slightly affects Mathematics learning.
4. My parents find time to follow up me in doing my assignments or learning tasks at home.	2.40	Disagree	The factor slightly affects Mathematics learning.
5. I am comfortable enough with my learning environment at home.	2.62	Agree	The factor affects Mathematics learning.
<b>GRAND MEAN</b>	<b>2.47</b>	<b>Disagree</b>	<b>The factor slightly affects Mathematics learning.</b>

### 3.2.3 Perceived Technology-Related Factors

As presented in the table, it reveals the statements of technology-related factors that could possibly affect the respondents'

Mathematics learning. The statement that has the highest weighted mean is “I have no internet to poor internet access.” It has gathered a mean of 2.93 with a verbal description of “Agree” which means that the said factor affects the students’ mathematics learning as they agreed to the statement saying that they have experienced no internet to poor internet connection upon studying.

On the other hand, the statement that has the lowest weighted mean is “I lack knowledge on the different online platforms such as Zoom, Google Meet, Messenger, Edmodo, Google Classroom, Odilo, Quizziz, Youtube, etc.” It means that majority of students have disagreed that they lack knowledge on the aforementioned online platforms; thus, getting a mean of 2.05 which means that the said factor slightly affects the students’ Mathematics learning. Meanwhile, the obtained grand mean is 2.34 wherein it has a verbal description of “Disagree” with its corresponding interpretation which is, it slightly affects the students’ Mathematics learning. This implies that, as a whole, students have disagreed of the said statements indicated as its technology-related factors as these statements slightly affect the students’ Mathematics learning.

Additionally, the said study is supported with Ogulande et al.'s (2016) study wherein the result of their study has stated that technological factors affect undergraduates' perceived usefulness of mobile technology. Furthermore, Harrell and Bynum (2018) also indicated that a successful student-use of technology hinges on knowing how to manage technology efficiently and overcoming barriers that come in integrating technology. Likewise, based on the result of this study, it has been found out that simply integrating and equipping technology does not mean to be a remedy for improving students' achievement. It needs to be constructed and planned executively to know whether the tools or technologies used are even effective or not to students' academic performance. Thus, it can be said that in accordance with the indicated statements of this study, some factors affect the students' Mathematics learning while there are also some that it only slightly affects as the indicated statements are limited only to common factors and do not cover a wide-range of factors involving the large extent of a technological factor.

**Table 11: Perceived Technology-Related Factors**

Statements	WM	Verbal Description	Interpretation
1. I have no internet to poor internet access.	2.93	Agree	The factor affects Mathematics learning.
2. I have no gadget to be used for online learning.	2.11	Disagree	The factor slightly affects Mathematics learning.
3. My gadget is incompatible with the learning management system used by the teacher.	2.42	Disagree	The factor slightly affects Mathematics learning.
4. I lack knowledge in using the technology.	2.21	Disagree	The factor slightly affects Mathematics learning.
5. I lack knowledge on the different online platforms such as Zoom, Google Meet, Messenger, Edmodo, Google Classroom, Odilo, Quizziz, YouTube, etc.	2.05	Disagree	The factor slightly affects Mathematics learning.
<b>GRAND MEAN</b>	<b>2.34</b>	<b>Disagree</b>	<b>The factor slightly affects Mathematics learning.</b>

### 3.3 Significant Relationship Between Learner-Related Factors and Mathematics Performance

As revealed in Table 12, the r-value between the Individual-related factors and Mathematics performance of the students is -0.1545 with a p-value of 0.0803. 56. Meanwhile, the r-value between the Home-related factors and Mathematics performance is -0.0130 with a p-value of 0.4531, whereas ther-value between the Technology-related factors and the Mathematics performance of the students is 0.1946 with a p-value of 0.9619. Based on these results, it means that the three

learner-related factors are not correlated individually with the students' Mathematics performance. With this, the totality between the learner-related factors and Mathematics learning has shown an  $r$ -value of 0.0747 with a  $p$ -value of 0.7502. Thus, the null hypothesis of no significant relationship is accepted. There is not enough evidence to claim that the learner-related factors had a relation to the students' Mathematics performance. This implies that the learner-related factors have no effect on the students' Mathematics performance and did not hamper their learning as the students' grade average remained at the upper grading system.

In relation to this, according to Peteros et al (2019), students' self-perceptions regarding their academic abilities are fundamental in their work to accommodate their responsibilities and activities as these could influence the extent of their work. Those students who believe that they are good in their area of specialization would likely be able to perform well in that said area than those who only believe that they are not that good. This denotes those beliefs of students should be consistent with what he or she is capable of as there is a tendency that their beliefs will stay in them. So, this means that those students who think that they are good and can perform well in Mathematics can develop a positive outlook regardless of external factors. Conversely, for those students who think oddly, then failure is possible as well as poor performances.

Likewise, the study of Balbalosa (2010) entitled "Factors Affecting Mathematics Performance of Laboratory High School students at Laguna State Polytechnic University" has shown that there is no significant relationship between student-related factors and their Mathematics performance. This means that the factors do not affect the Mathematics performance of the students of the said university.

Knowing this has supported the result of this study since students' Mathematics performance does not have a significant relationship with the learner-related factors such as individual, home, and technology-related factors. The factors did not entirely hinder that students' academic performance as they were still able to perform in the upper level of the grading system. Moreover, although the Mathematics performance and the learner-related factors do not hold a negligible positive correlation, students can still demonstrate their skills and knowledge regardless of the external and internal factors that they have as long as they have this driving force to perform well in their class.

**Table 12: Significant Relationship Between Learner-Related Factors and Mathematics Performance**

<b>Learner-Related Factors</b>	<b><math>r</math></b>	<b><math>p</math>-value</b>	<b>Decision</b>	<b>Interpretation</b>
Individual-related Factors	-0.1545	0.0803	Accept $H_o$	Not significant
Home-related Factors	-0.0130	0.4531	Accept $H_o$	Not significant
Technology-related Factors	0.1946	0.9619	Accept $H_o$	Not significant
<b>TOTALITY</b>	<b>0.0747</b>	<b>0.7502</b>	<b>Accept <math>H_o</math></b>	<b>Not significant</b>

#### 4. CONCLUSIONS

The purpose of this study was to identify learner-related factors that influence Mathematics learning. Based on the findings, it is concluded that learner-related factors and student mathematics performance have no significant association. This indicates that learner-related factors do not completely influence the performance of Cebu Technological University-Argao Campus BSEd-Math students. Despite the abrupt transition from face-to-face to online learning, students are able to continue their education.

Furthermore, the study's findings revealed that the learner-related factors affecting Mathematics learning mentioned in the study did not support related learning theories such as Piaget's Constructivism Learning Theory,

Harasim's Online Collaborative Learning Theory, and Siemens' Connectivism Theory. Thus, the theories were refuted

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